

Sinske HATTORI*: **A remarkable New Caledonian
species of *Frullania* (Hepaticae)**

服部新佐*: ニューカレドニア産ヤスデゴケ属(苔類)の一新種

The known hepatic flora of New Caledonia is unique, containing *Personiella* and many other endemic taxa, including *Schusterella microscopica* (Tayl.) Hatt. and other interesting taxa in the Frullaniaceae. Since the area has been inadequately explored, we can expect additional interesting endemic taxa to be discovered.

Mr. V. Tixier has kindly sent to me a few collections of New Caledonian Frullaniaceae, in which I have found a new species with several remarkable features. I wish to thank Mr. V. Tixier for the submission of such interesting material to me, and also, Dr. A. J. Sharp for his assistance with English manuscript of this paper.

***Frullania* (Diastaloba) *tixieri* Hatt., spec. nov. (Figs. 1 & 2)**

Planta minor; caulis ca. 20 mm longus, dense pinnatim ramosus, ramis parvis, late patentibus; lobi foliorum caulinarum imbricati, suborbiculares, apice spinifero, spinis valde incurvis, basi truncata, non-appendiculata sed spinifera, lobulis clavato-cylindricis, leavibus, stylis ciliatis; amphigastria caulina minora, caule hard duplo latiora, ca. 2/5-bifida; gynoeceia terminalia, perianthio vix exserto, pyriformi, dorsiventrally adpresso, laevi, 2-plicato, lobo bracteae intimae oblongo e angusta basi, apice ca. 4 spinato, lobulo 1/2-coalito, obovato-oblongo, apice latiore, spinifero, bracteola intima amphigastriis caulinis similis sed majore.

Plants small, olive-brown to brownish, prostrate on bark of trees or often epiphyllous; stem ca. 20 mm long, \pm densely pinnately branched, branches widely spreading, far smaller than the stem, ca. 2 mm long, rarely elongating and similar to the stem; short, intercalary branches of *Lejeunea*-type occasionally present. Lobes of stem-leaves imbricate, widely spreading, \pm convex with narrowly incurved apex, dorsally barely crossing to the farther edge of stem, when flat suborbicular, 0.65–0.7 mm long and

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wide, apex obtuse, with strongly incurved spina of several uniseriate cells, dorsal base truncate, non-appendiculate but bearing a spina-like tooth of a row of a few to several, uniseriate cells, ventral margin substraight, insertion \pm shorter, J-shaped; cavities of marginal cells $17-20 \times 17 \mu$, of median cells $32-37 \times 30 \mu$, of basal cells $40-50 \times 25-30 \mu$, walls of marginal to median cells thin but with large, subnodulose trigones, walls of basal cells \pm sinuose with large, bulging trigones and nodulose intermediate thickenings, cavities hyaline to brownish-red, walls hyaline; dorsal surface of leaf-lobe weakly mammillose due to protruding tangential cell-walls; lobules of stem-leaves clavate, smooth (rarely partly \pm mammillose), remote from and widely spreading (usually at angles of more than 90°) with the stem, proboscis low-triangular, hyaline, mouth wide, arched (\pm J-shaped) and crenulate above; styli large, upper half cilium-like, composed of several, uniseriate cells. Stem-underleaves small, obovate in outline, 0.25-0.3mm long and 0.2mm wide, 1/3-2/5-bifid, lobes \pm divergent, triangular to triangular-lanceolate, acuminate-acute at apex, sinus wide, acute to subacute, base \pm obtuse, insertion transverse, rhizoid-bundle frequent, attaching the plant firmly to the substratum. Lobes of branch-leaves much smaller than those of stem, with shorter apical teeth, styli, and shorter or often poorly developed basal teeth, whereas the lobules are comparatively large, almost similar to those of stem. Branch-underleaves nearly flat, narrow, 1/2 or more bifid, sinus obtuse, lobes lanceolate to pilose. Dioicous. Gynoecea terminal on stem, with a subfloral innovation of *Frullania*-type; perichaetial leaves 2-3 pairs, grading into subfloral leaves; innermost bract-lobe asymmetric, oblong from narrow base, with ca. 4 teeth at apex, the lobule 1/2 or less connate, flat and appressed to the perianth, obovate-oblong, apex wide, with 1 spine; innermost bracteole (young?) much larger than, but similar to, stem-underleaves; perianth (young) barely exerted, pyriform, dorsiventrally flattened, smooth, with 2, \pm inflated lateral keels, apex wide, subtruncate, with comparatively large beak. Androecea usually very shortly stalked (stalk with 1-3 deformed leaves), lateral on stems and branches, capitate with 2-3 pairs of bracts.

New Caledonia: Mt. Do, 900 m, on twigs of *Guettarda*, 15-IV-1975, coll. Mac Kee no. 30-112 (with 1 gynoeceium; associated with *Schusterella chevalieri* with young gynoecea), Type in NICH (dupl. in herb. V. Tixier); on twigs of *Rapanea*, 15-VI-1975, coll. J.H. Vallon (with several androecea),

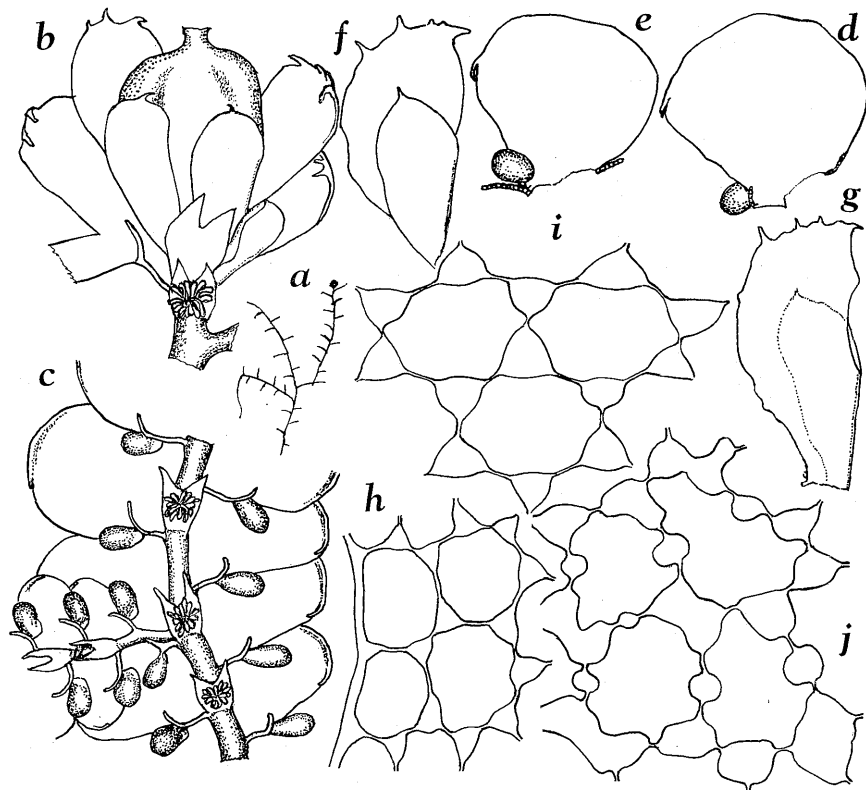


Fig. 1. *Frullania tixieri* Hatt. a. Branching, $\times 1.2$. b. Gynoecia, ventral view, $\times 26.5$. c. Portion of stem, ventral view, $\times 26.5$. d-e. Stem-leaves, $\times 26.5$. f-g. Innermost female bracts, $\times 26.5$. h-j. Cells of lobe of stem-leaf, h from margin, i from middle, j from base, all $\times 545$. Drawn from type.

in NICH (dupl. in herb. Mac Kee no. 30116; herb. V. Tixier); 950 m, épiphyllé sur *Zygogynum* sp., 24-IV-1975, leg. Mac Kee no. 30080 (associated with *Schusterella chevalieri*), in NICH (dupl. in herb. Tixier).

The diagnostic characters of this new species are (1) the smooth, dorsoventrally flattened perianth, with two, \pm inflated lateral keels (ventral keel never present), (2) the occurrence of a minute, filiform tooth at the dorsal base of leaf-lobes, (3) the innermost bract-lobe with ca. 4 apical teeth and -lobule nearly flat, appressed to the perianth, and obovate-oblong with a wide

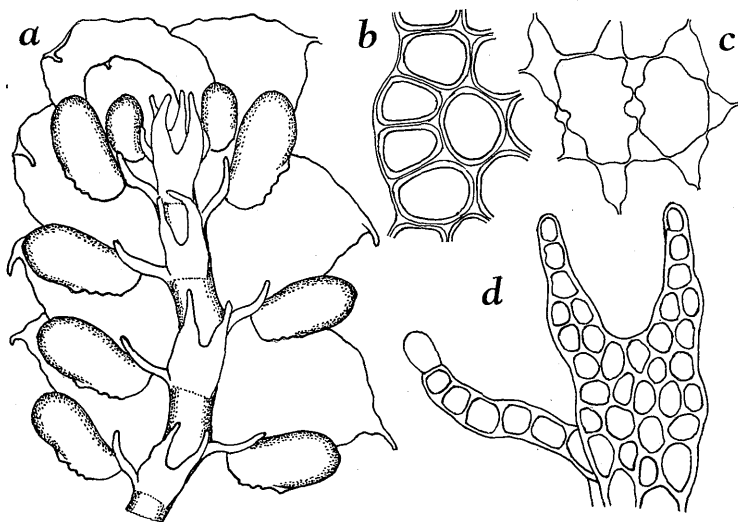


Fig. 2. Poorly developed plant of *Frullania tixieri* Hatt. *a*. Apical portion of stem, ventral view, $\times 88$. *b-c*. Cells of lobe of stem-leaf, *b* from margin, *c* from middle, both $\times 545$. *d*. Stem-underleaf and stylus of leaf, $\times 280$. Drawn from paratype (deg. Mac Kee 30080).

and spiniferous apex, (4) the innermost bracteole larger than, but similar to, stem-underleaves, (5) the lobe of stem-leaves with an incurved apical spine and a non-appendiculate and truncate dorsal base, (6) the nearly smooth, very widely spreading lobule, (7) the long, filiform stylus, (8) the large cells of leaf lobes weakly mammillose dorsally and with large trigones, (9) the small, flat stem-underleaves with entire lateral margins, (10) the branch leaf-lobes and underleaves much smaller than those of the stem, (11) the small size of plants, and (12) their unisexuality.

Schusterella chevalieri (Schust.) Hatt. (= *Neohattoria chevalieri* Schust.) is frequently associated with this species. *S. chevalieri* is smaller than this species and endemic to New Caledonia. It was described from the plants intermingled within the type material of *S. microscopica* (Tayl.) Hatt. together with another *Schusterella*, *S. caledonica* (Schust.) Hatt. (= *Neohattoria caledonica* Schust.) which seems to be very closely related to *S. chevalieri* and may possibly be a form of it, and so far has been known only by the type. Among the above characters, I consider the dorsiventrally flattened

perianth with two±inflated lateral keels as the most important, and it is necessary to propose at least a new section for the present species, as described below:

Frullania subgen. *Diastaloba* sect. **Tixiera** Hatt., sect. nov.

Perianthia dorsiventrale adpressa, carinis 2, lateralibus (sine carina ventrali), laevia; bracteola intima amphigastriis caulinis similis (solum major); lobi foliorum spiniferi in apicem et basem, stilo longo, filiforme.

Species typica: *Frullania tixieri* Hatt.

There seems to be few species of subgen. *Diastaloba* with such a perianth, which should be placed in this section. The perianth of *Frullania deplanata* Mitt. from New Zealand is, according to the original description of Mitten (in Hooker., Flora of New Zealand: 161, t. 104, f. 3. 1855), "periantho elongato obcordato deplanato laevi," and, according to Stephani (Spec. Hepat. 4: 407-408, 1910), "Perianthia ovato-oblonga, levia, *explanata*, rostro parvo," though it belongs to subgen. *Trachycolea*, and can not be placed in this section.

In the specimen leg. Mac Kee 30080 a single poorly developed stem was found, intermingled with 3 stems of *Schusterella chevalieri*. This stem is only ca. 1 cm long and 0.07 mm in diam., with leaves reddish-brown in color in herbarium; and it has few branches. This poorly developed plant is similar to the gametophyte of the North Bornean *Frullania* (*Diastaloba*) *meijeri* Hatt. The following is a key to separate this plant fragment (in specim. leg. Mac Kee 30080) from the common *F. meijeri*.

- 1) Stem-underleaves ca. 0.12 mm long and 0.07 mm wide, ca. 3/5-bifid, lobes lanceolate, 5(-6) cells long, 2 cells wide at base, disc 3-4 cells long and 4-6 cells wide; apical tooth of lobe of stem-leaf composed of 3 uniseriate cells; cell-cavities of lobes of stem-leaves smaller toward margin (ca. $12 \times 10 \mu$ along margin, $27-35 \times 17-20 \mu$ at middle), dorsal mammillae none; lobules of stem-leaves with smooth apex and crenate mouth-margin; endemic to New Caledonia *F. tixieri*
- 1) Stem-underleaves 0.15-0.17 mm long and 0.1-0.12 mm wide, 1/3-2/5-bifid, lobes triangular or lanceolate, ca. 4 cells long and 3 cells wide at base (upper 2 cells merely uniseriate or none), disc ca. 6 cells long and wide; apical tooth of lobe of stem-leaf composed of 2 (or 1) uniseriate cells; cell-cavities of lobe of stem-leaf almost equal in size ($15-25 \times 15-20 \mu$)

along margin, $25-37 \times 20-27 \mu$ at middle), dorsal mammillae of cells usually \pm well-developed; lobules of stem-leaves with \pm low subconic mammillae above and entire-margined mouth; endemic to N. Borneo.....

.....*F. meijeri*

When gynoeceia are developed, these two species are easily distinguished, because *F. meijeri* has the perianth pyriform, clearly 3-keeled, and \pm mam-millose on the surface, the innermost bract with a lobe more toothed, acute and pilose, and not incurved at the apex, and a lobule many toothed and acute and pilose at the apex, and the innermost bracteole large and also usually many-toothed in contrast to the characters of *F. tixieri*.

* * * *

ニューカレドニア島には固有の特異な苔類が多く、ヤスデゴケ科においても大分変わった種がある。本報に紹介したごく小形の新種 *Frullania tixieri* も然りで、一番重要な点は花被が背腹より圧された如く、扁平で、キールは両側だけとなる（腹面にも 1 キールがあり、ほぼ三角形となるのが原則で、これに 2 次的に腹面に 1-2 (～数個)、背面に 1 (まれに数個) の小キールが出ることもある)。葉の上片の背面基部に 1 小刺毛を生ず点も殆ど類例をみない。その他色々な特徴があり、本種を基にして新節 *Tixiera* を提案した。本種とよく混生する微小な *Schusterella chevalieri* もニューカレドニアの固有種である。

○シカクイの芽生品 (上野雄規) Yūki UENO: A viviparous type of *Eleocharis wichurai*

シカクイは、アジア東部の湿地に産する。その芽生品の小群落を、昭和 48 年 8 月 12 日、宮城県白石市大鷹沢大町〔桑折 403376-34〕にて見出した。これに、茎の上で小穂中の種子の一部が発芽し、1～数個の新苗をつけているものである。

芽生品は、タカネイチゴツナギ、タマコウガイゼキショウなどで認められているが、本種では初めてと思われるので、コモチシカクイと呼ぶことにする。

記載にあたり、ご指導いただいた大井次三郎先生に感謝の意を表する。

Eleocharis wichurai Boeckeler form. **vivipara** Ueno. form. nov.

Spicula vivipara.

Nom. Jap. Komochi-shikakui (nom. nov.).

Hab. Japan. Honshū: Ō-machi, Ō-taka-sawa, Shiroishi-shi, Miyagi Pref. [Kōri 403376-34] (Y. Ueno, Aug. 12, 1973, no. 334855-holotypus in TNS).

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